Anatomical Study of the Femoral Nerve in the Adductor Canal: Clinical Implications

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INTRODUCTION:
Controversy persists concerning the anatomy of the femoral nerve in the adductor canal (AD). A study by David Burckett et al. identified two main branches of the femoral nerve in AD: the saphenous nerve and the nerve to vastus medialis (NVM). Conversely, research by H.L. Andersen et al. reported no NVM in the AD, potentially resulting in quadriceps muscle weakness. Due to these conflicting findings and a dearth of research, this cadaveric study aimed to identify anatomical branches of the femoral nerve in AD among cadavers and describe the related anatomy.
METHODS:
Following ethical approval, 32 fresh cadaveric lower limbs were dissected using a standard technique, and the branches of the femoral nerve were explored along the thigh and the AD. Data collection and analysis were conducted.
RESULTS:
Results indicated a mean age of 70.31±11.09 years, 68.75% male, a body weight of 60.31±7.05 kg, AD length of 7.20±2.81 cm, AD length to height ratio of 0.04±0.02, and AD length to total distance (anterior superior iliac spine to joint line of the knee) ratio of 0.15±0.06. The NVM was present in the AD in 34.4% and found at a distance ratio of 0.51 relative to the AD length.
DISCUSSION AND CONCLUSION:
In conclusion, these findings provide an anatomical guide for surgeons regarding variations in the femoral nerve in AD. The presence of NVM in the AD suggests that an adductor canal block (ADB) may lead to quadriceps weakness, though less frequently than with a femoral nerve block. Further studies are warranted to enhance the clinical applicability of these findings.